SIEMENS
Ingenuity for life

System design with Sicat Candrop Pro

Calculation of droppers and cantilevers

siemens.com/rail-electrification

When calculating droppers and cantilevers for mass transit and main-line railways we combine the calculations of our tool Sicat® Candrop Pro with our comprehensive system expertise.

Features

- Visualization of catenaries in 2D
- Visualization of cantilevers and catenaries in 3D
- Design types for customers pre-configured by Siemens
- Storage of all relevant components with dimensions for geometry calculation
- Providing of rules for component selection

Dialogue and report language

In the Program the dialogue languages German and English are available. Reports can be generated in the languages German, English, Hungarian and Turkish by default up to now. Further report languages are possible.

Field of applications

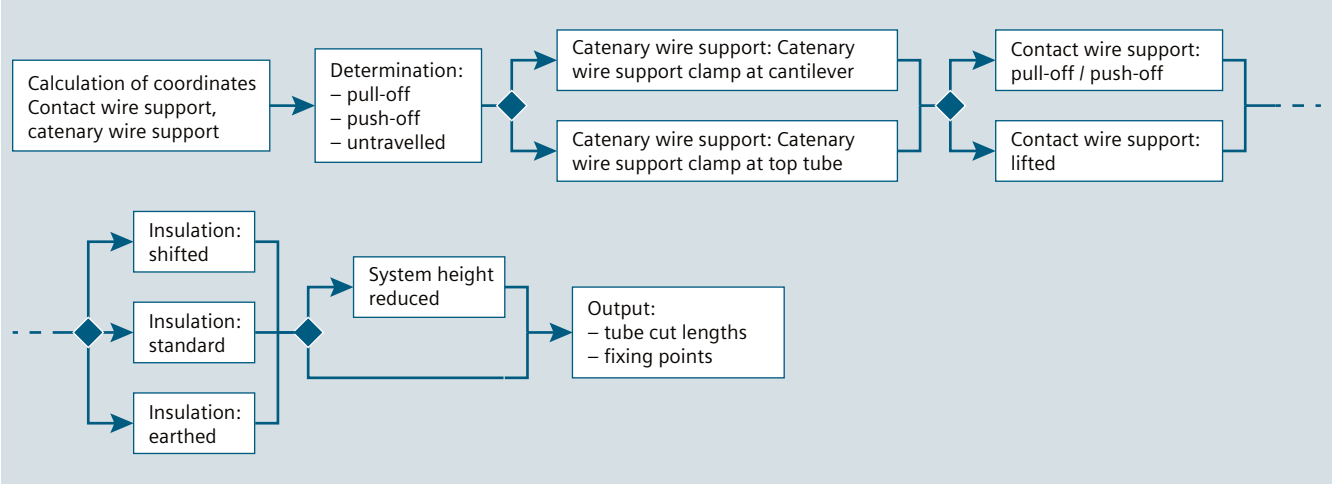
Sicat Candrop Pro is a tool for easily calculating cantilevers and droppers for overhead contact line systems. After entering the track geometry and the positions of the poles as well as selecting the overhead contact line system, cantilevers and catenary will be calculated accurate to dimension. For cantilever manufacturing lists with cut lengths and fixing points are built and manufacturing lists for droppers are generated.

By visualizing the calculation results, Problems which occur during the construction phase can be recognized early and corrected cost-efficiently.

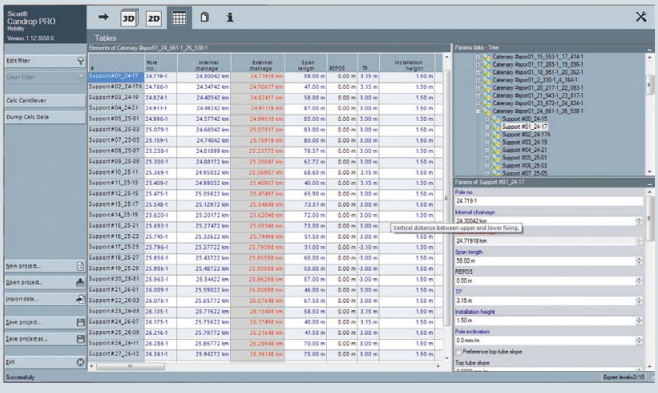
Advantages

- Mistakes in the planning phase can be recognized early
- High accuracy of the contact wire location
- Fast Processing due to local use
- Optimal interaction between cantilever and catenary, since both are mechanically harmonized to each other
- Facilitation of the documentation generation (e.g. as-built documentation)
- Accurate and clearly arranged input for the manufacturing of cantilevers and droppers
- Possibility of interactive modification for Problematic cantilevers
- Visual control facilities

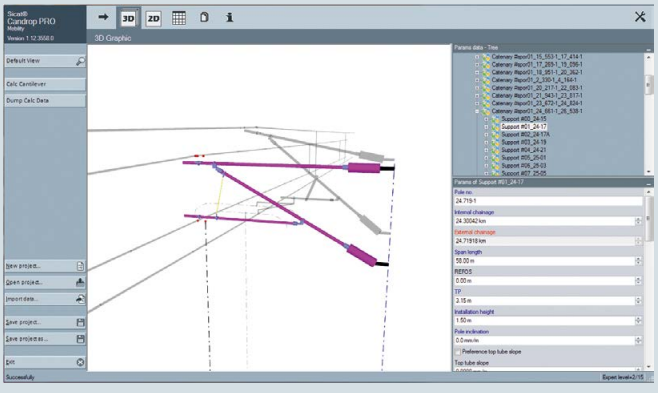
Process of cantilever calculation



Simplified schematic representation of the Process of cantilever calculation following the design pattern of a chain of responsibility

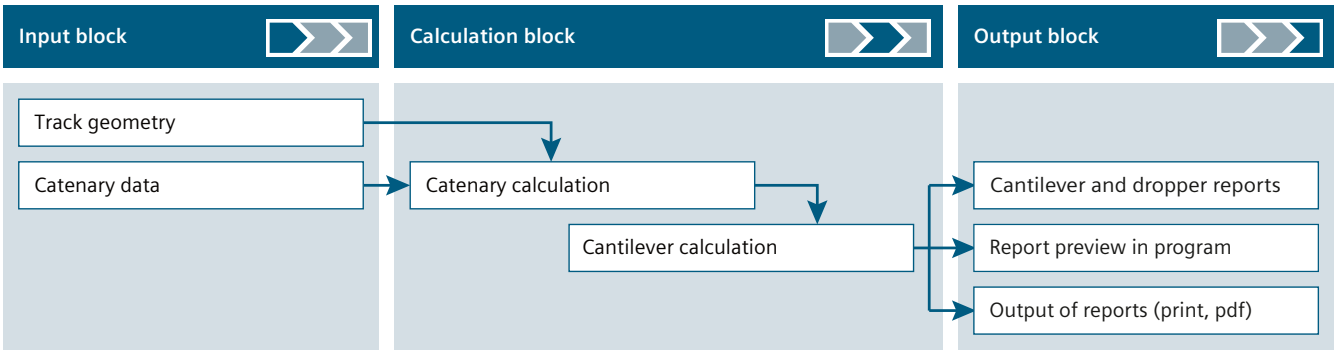


Data input via tables for mass input (middle) or by single value input in a form (at the bottom right)



3D view of geometry calculation of the catenary

Program structure



Input block

With the input data cantilevers and droppers can be modeled and calculated precisely.

The following data is entered:

Input data

Track geometry

- Track axes and their elements such as straight lines, circular arcs and transition curves in the plane
- Cants and gradients
- Combination of two Project files for the calculation of switch double cantilevers

Catenary and support data

- Contact wire height and system height
- Kilometer position or span length
- Properties of the support (standard, untravelled)
- Shifted insulation for triangular cantilevers
- Reduced system height with catenary wire supports

Calculation block

In this second Program block of Sicat Candrop Pro cantilever and dropper are modeled and calculated precisely.

Calculations

Catenary calculation

- Geometry calculation of the catenary in 3D
- Calculation of all necessary junctions between catenary wire, droppers, contact wire and stitch wires
- Calculation of the radial forces at the support for the following cantilever calculation

Cantilever calculation

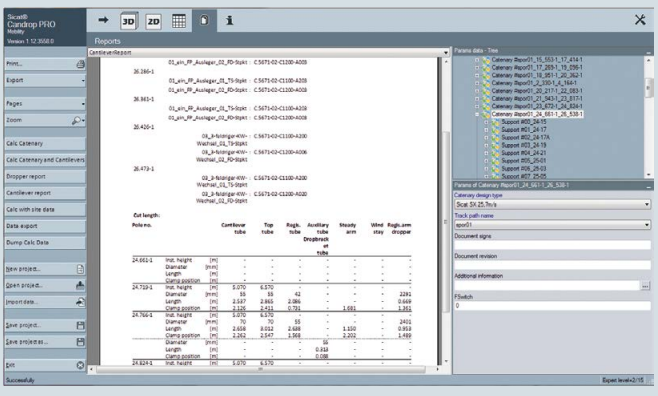
- Geometry calculation of cantilever
- Determination of tube cut lengths
- Determination of fixing points

Output block

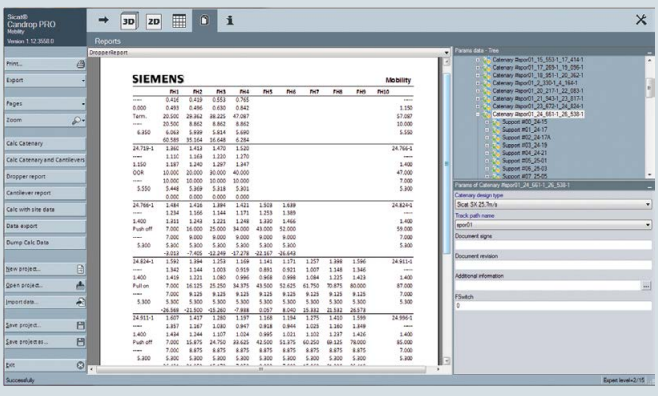
In the output block reports are generated and visualized and can also be printed.

Outputs

- Reports of cantilevers and droppers
- Preview of report in the program
- Printing of the report
- Output of report as pdf file



Preview of cantilever report



Preview of dropper report

© Siemens Mobility GmbH 2018
All rights reserved

Sicat Candrop Pro / Product information
No. A6Z00039716943 / Version 1.0.1

Siemens Mobility GmbH
Otto-Hahn-Ring 6
81739 Munich
Germany

For further information please contact:
Siemens Mobility GmbH
Turnkey Projects & Electrification
Rail Electrification
Mozartstraße 33b
91052 Erlangen
Germany

electrification.mobility@siemens.com
www.siemens.com/rail-electrification

Subject to changes and errors. The information given in this document only contains general descriptions and/or performance features which may not always specifically reflect those described, or which may undergo modification in the course of further development of the products. The requested performance features are binding only when they are expressly agreed upon in the concluded contract.